U.S. Department of Energy
Office of River Protection
Contract Management Division
Mr. Michael K. Barrett
Contracting Officer
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

CCN: 028987

Dear Mr. Barrett:

CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL FOR APPROVAL: AUTHORIZATION BASIS CHANGE NOTICE 24560-WTP-ABCN-ESH-02-006, REVISION 0, "MOISTURE CONTENT OF COMPACTED STRUCTURAL FILL"

Reference CCN 028618, Letter, A. R. Veirup, BNI, to M. K. Barrett, ORP, "Decision to Deviate from the Authorization Basis for the Hanford Tank Waste Treatment and Immobilization Plant," dated February 21, 2002

Bechtel National, Inc. (BNI) is submitting the attached Authorization Basis Change Notice (ABCN), 24560-WTP-ABCN-ESH-02-006, Revision 0, to the U.S. Department of Energy, Office of River Protection, and the Office of Safety Regulation (OSR) for review and approval. This ABCN reconciles the deviation to the authorization basis described in the Reference.

This ABCN changes the moisture content requirement in the Limited Construction Authorization Request for soil compaction from ±2% of optimum to ±5% of optimum. This change is requested because the soils are very permeable and lose water quickly, which makes it very difficult to maintain moisture content within ±2% of the optimum moisture content in the field. Compaction to an in-place density of at least 95% of the maximum laboratory dry density as determined by ASTM D1557 can be achieved with controlling the moisture content to be within ±5% of optimum as determined by ASTM D1557.

Approval of this ABCN is requested by May 15, 2002, to meet the required implementation schedule for reconciliation of deviation to the authorization basis.

An electronic copy of ABCN 24590-WTP-ABCN-ESH-02-006, Revision 0, is provided for OSR's information and use.

Please contact Mr. Bill Spezialetti at (509) 371-4654 for any questions or comments.

Very truly yours,

A. R. Veirup
Prime Contract Manager

TR/slr

Attachment: Authorization Basis Change Notice 24590-WTP-ABCN-ESH-02-006, Revision 0, plus attachments

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ESH-01-006 Revision 0

ABCN Title Selection of Implementing Standard for Maintenance

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Ken Gibson		
Reviewer:	Rodger Dickey		

B. Required Reviewers

Review Required? *For each person checked Yes, that signature block must be completed.*

Review Required?	Role	Print/Type Name	Signature	Date
☒	ES&H Manager	Fred Beranek		
☒	QA Manager	George Shell		
☒	PSC Chair	Bill Poulson		
☐	Operations Manager			
☐	Engineering Manager			
☐	Pretreatment APM			
☐	LAW APM			
☐	HLW APM			
☐	BOF APM			
☐	Construction Manager			
☐	Business/Project Controls Manager			
☐	ALARA PSC Subcommittee Chair			
☒	PMT Chair	Dennis Klein		

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ESH-01-006 Revision 0

ABCN Title Selection of Implementing Standard for Maintenance

C. <u>ABCN Approval</u>

WTP Project Manager Ron Naventi

Print/Type Name *Signature* *Date*

II. Description of the Proposed Change to the Authorization Basis

D. Affected AB Documents:

Title	**Document Number**	**Revision**
Safety Requirements Document Volume II	24590-WTP-SRD-ESH-01-001-02	0
Integrated Safety Management Plan	24590-WTP-ISMP-ESH-01-001	0

Decision to Deviate ☐ Yes ☒ No

If yes, DTD Number ______ Deficiency Report Number ______

Initiating Document Number Contract No. DE-AC27-01RV14136 Revision ______

E. Describe the proposed changes to the Authorization Basis Documents:

For SRD Safety Criteria 7.6-1 through 7.6-4 replace the implementing standards (of ISMP 1.3.10, *Classification of Structures, Systems, and Components*, ISMP 1.3.11, *Quality Levels*, ISMP 3.2, *Safety Responsibilities*, ISMP 3.4, *Safety/Quality Culture*, ISMP 3.13, *Reliability, Availablility, Maintainability, and Inspectability (RAMI),* ISMP 3.16.3, *Incident Investigations,* ISMP 3.16.5, *Performance Monitoring,* ISMP 3.16.6, *Performance Indicators,* ISMP 3.16.8, *Feedback and Trending,* ISMP 4.2.1, *Engineered Features,* ISMP 4.2.2, *Training and Procedures*, ISMP 5.3, *Configuration Management*, ISMP 5.4, *Compliance Audits*, ISMP 5.6.5, *Mechancial Integrity*, ISMP 10.0, *Assessments* and ISMP 11.0, *Organization Roles, Responsibilities, and Authorities)* with DOE Guide DOE G 433.1, *Nuclear Facility Maintenance Management Program Guide for Use with DOE O 433.1*, as tailored in SRD Volume II, Appendix C. These changes are on SRD Volume II, pages 7-17, 7-18 and 7-19, all revision 0.

For SRD Appendix E, *Reliability, Availablility, Maintainability, and Inspectability (RAMI*) rewrite the section on maintainability. These changes are on SRD Volume II, pages E-2, revision 0.

See Attachment 1 of this ABCN for the specific proposed changes.

The text of DOE Guides not included in the Contract No. DE-AC-27-01RV14136, may be used in WTP Project documents. This text may be cited verbatim or may be interpreted for project specific purposes. These guides are not intended to be adopted by the project or to be implmented in their entirety. Implementation of this ABCN does not cause an impact to project design or programs.

F. List associated ABCNs and AB documents, if any:

ISMP (24590-WTP-ISMP-ESH-01-001). Even though several sections of the ISAR are identified in ISMP sections referenced as the implementing standard for SRD SC 7.6-1 through 7.6.4, the references are stated to only provide guidance.

ABCN-24590-01-00008, *Integrated Safety Management Plan (ISMP) Standards Approval Package (SAP Submittal* proposes to change the definition of Maintainability in section 3.13, *Reliability, Availability, Maintainability,and Inspectability (RAMI)* the same as proposed in this ABCN.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ESH-01-006 Revision 0

ABCN Title Selection of Implementing Standard for Maintenance

G. Explain why the change is needed:

Contract No DE-AC27-01RV14136 Standard 5 requires the contractor to develop the necessary processes and programs to support Commissioning of the WTP, which includes the maintanence program. DOE Guide DOE G 433.1-1, as tailored in SRD Volume II, Appendix C provides guidance to ensure an appropriate WTP facility-specfic Maintenance program is developed . DOE G 433.1-1 is a new guide that establishes the standard to be used at the Hanford Site and throughout the complex for maintenance. By adopting the guidance described in DOE G 433.1-1, as tailored in SRD Volume II, Appendix C, the project will avoid potential problems with developing a WTP facility-specific mainenance program that may impact commissioning. The WTP Project will be able to use the existing management and staff expertise and experience to support the commissioning schedule. In addition, other regulators and stakeholders that may review the document will be more familiar with the approved DOE guidance document than they will be with the currently identified implementing standard (sections within the ISMP). These attributes will also be beneficial for future operations at the facility.

H. List the implementation activities and the projected completion dates:

Activity	Date
Inform DOE that AB has been revised and provide updated hard copy and electonic version of AB	30 days or less after DOE approval
Distribute controlled copy revised pages	30 days after DOE approval

Documents	Describe extent of revisions	Date
1 N/A		

Describe other activities:	Date
1 N/A	

III. Evaluation of the Proposed Change

I. Is DOE prior approval required?

1 Does the revision involve the deletion or modification of a standard previously identified or established in the SRD? **Yes** ☒ **No** ☐

Explain

This change will replace the implementing standard selected for maintenance and update the definition of maintainability as referenced in the SRD.

2 Does the revision result in the reduction in commitment currently described in the AB? **Yes** ☐ **No** ☒

Explain

The selected implementing standard, DOE G 433.1-1, as tailored in SRD Volume II, Appendix C, complies with top-level principles, applicable laws and regulations, and the contract, and provides adequate safety. No changes are proposed for the SRD and ISMP, which identify commitments to be implemented with development of the WTP Project maintenance program per DOE G 433.1-1. As such, the new standard will not result in a reduction in commitment.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ESH-01-006 Revision 0

ABCN Title Selection of Implementing Standard for Maintenance

3 Does the revision result in a reduction in the effectiveness of any procedure, program, plan, or management process described in the AB? **Yes** ☐ **No** ☒

Explain

The change in the selected implementing standard brings the project in line with the programmatic requirements for maintenance as defined in the Contract, however does not delete programmatic requirements for the maintenance program contained in the authorization basis. The current SRD and ISMP requirements are unchanged and remain. See Attachment 3, *SRD Proposed Changes Summary/Safety Evaluation*. The requirements for programmatic processes are not deleted and retain the current level of effectiveness.

J. Complete the safety evaluation by describing how the revision to the AB:

1 will continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety

See Attachment 2, *Identification of Implementing Standards for WTP Maintenance Program*.

2 will continue to conform to the original submittal requirements associated with the AB documents being revised

See Attachment 2, *Identification of Implementing Standards for WTP Maintenance Program*.

3 will not result in inconsistencies with other commitments and descriptions contained in the AB or an authorization agreement

See Attachment 2, *Identification of Implementing Standards for WTP Maintenance Program*.

K. Justification of the Proposed Change

Provide a justification that demonstrates that the proposed change is safe

The regulatory bases for the subject Safety Criteria are listed in DOE/RL-96-0006, Sections 4.2.7.1, 4.3.5.1, and 5.2.7. Attachment 2 contains a discussion of these Safety Principles and a summary of the justification that DOE G 433.1-1, as tailored in SRD Volume II, Appendix C does not adversely impact the environment, conforms to applicable laws, regulations, the Contract, the Top-Level Standards, and does not conflict with other parts of the authorization bases. Attachment 3 provides the basis/rationale for replacing the associated SRD safety criteria implementing codes and standards citation of ISMP sections with DOE G 433.1-1, as tailored in SRD Volume II, Appendix C.

L. Certification of Continued SRD Adequacy

Based on evaluations from III.I.1 and III.J.1. If question III.I.1 is marked "yes, Project Manager certification is required. The Project Manager's signature certifies that the revised SRD continues to identify a set of standards that provide adequate safety, complies with WTP applicable laws and regulations, and conforms with top-level safety standards and principles. This certification is based on adherence to the DOE/RL-96-0004 standards identification process and successful completion of review and confirmation by the PSC.

WTP Project Manager: Ron Naventi

Print/Type Name *Signature* *Date*

M. List of Attachments

1. Safety Requirements Document (SRD), 24590-WTP-SRD-ESH-01-001-02, Proposed Changes
2. Identification of Implementing Standards for the WTP Maintenance Program
3. SRD Proposed Changes Summary/Safety Evaluation

7.6 Maintenance

Safety Criterion: 7.6 - 1

A maintenance program for the facility shall be developed and implemented using a tailored approach.

Implementing Codes and Standards

~~24590-WTP-ISMP-ESH-01-001, Integrated Safety Management Plan~~
~~Section: 4.2.1 Engineered Features~~
DOE Guide DOE G 433.1-1, *Nuclear Facility Maintenance Management Program Guide for Use with DOE O 433.1*, as tailored in SRD Volume II, Appendix C

Safety Criterion: 7.6 - 2

The maintenance program shall contain provisions sufficient to preserve, predict, and restore the availability, operability, and reliability of structures, systems, and components designated as Important to Safety.

Implementing Codes and Standards

~~24590-WTP-ISMP-ESH-01-001, Integrated Safety Management Plan~~
~~Section: 3.13 Reliability, Availability, Maintainability, and Inspectability (RAMI)~~
DOE Guide DOE G 433.1-1, *Nuclear Facility Maintenance Management Program Guide for Use with DOE O 433.1*, as tailored in SRD Volume II, Appendix C

Regulatory Basis

DOE/RL-96-0006 *4.3.5.1 Operational Testing, Inspection, and Maintenance*

Safety Criterion: 7.6 - 3

The maintenance program for Important to Safety Structures, systems and components shall clearly define:

(1) The Important to Safety structures, systems, and components that comprise the facility

(2) The requirements of the maintenance program that are derived from the program elements listed in Safety Criterion 7.6-4

(3) The management systems used for those activities, including the means for monitoring and measuring the effectiveness of the program and the management of maintenance backlog

(4) The assignment of responsibilities and authority for all levels of the maintenance organization

(5) Mechanisms to feedback such relevant information as trend analysis and instrumentation performance/reliability data in order to identify necessary program modifications

(6) Provisions for identifying and evaluating possible component, system design, occupational safety and health, or other relevant problems and implementation of a self-assessment program

(7) Performance indicators and criteria to be utilized to measure equipment, systems, and personnel effectiveness in maintenance activities

(8) Interfaces between maintenance and other organizations (e.g., involving operations, engineering, quality, and safety)

(9) Quantitative reliability target values for systems and components to start or run, when such values are credited in safety analysis

(10) Appropriate authorization is received before modification starts on a safety instrumented system

(11) Assessment of impact of the modification on the functionality of the safety instrumented system is performed, to ensure functionality is not impaired

Implementing Codes and Standards

~~24590-WTP-ISMP-ESH-01-001, Integrated Safety Management Plan~~
~~Section: 1.3.10 Classification of Structures, Systems, and Components~~
~~Section: 3.2 Safety Responsibilities~~
~~Section: 3.4 Safety/Quality Culture~~
~~Section: 3.13 Reliability, Availability, Maintainability, and Inspectability (RAMI)~~
~~Section: 3.16.3 Incident Investigations~~
~~Section: 3.16.5 Performance Monitoring~~
~~Section: 3.16.6 Performance Indicators~~
~~Section: 3.16.8 Feedback and Trending~~
~~Chapter: 10.0 Assessments~~

24590-WTP-SRD-ESH-01-001-02, Attachment A, Implementing Standard for Safety Standards and Requirements Identification

DOE Guide DOE G 433.1-1, *Nuclear Facility Maintenance Management Program Guide for Use with DOE O 433.1*, as tailored in SRD Volume II, Appendix C

Regulatory Basis

DOE/RL-96-0006 4.2.7.1 Reliability, Availability, Maintainability, and Inspectability (RAMI)-Reliability
DOE/RL-96-0006 4.3.5.1 Operational Testing, Inspection, and Maintenance-Operational Testing, Inspection, and Maintenance

Safety Criterion: 7.6 - 4

The maintenance program shall address each of the following elements:

(1) Organization and administration
(2) Maintenance training and qualification
(3) Maintenance facilities, equipment, and tools
(4) Types of maintenance
(5) Maintenance procedures and other work-related documents
(6) Planning, scheduling, and coordinating maintenance activities
(7) Control of maintenance activities
(8) Post-maintenance testing
(9) Procurement of parts, materials, and services
(10) Material receipt, inspection, handling, storage, retrieving, and issuance
(11) Control and calibration of measuring and test equipment
(12) Maintenance tools and equipment control
(13) Documented facility condition inspections to identify and address aging effects
(14) Management involvement with facility operations
(15) Maintenance history and trending
(16) Analysis of maintenance-related problems
(17) Modification work.

Implementing Codes and Standards

~~24590-WTP-ISMP-ESH-01-001, Integrated Safety Management Plan~~
~~Section: 1.3.11 Quality Levels~~
~~Section: 4.2.2 Training and Procedures~~
~~Section: 5.3 Configuration Management~~
~~Section: 5.4 Compliance Audits~~
~~Section: 5.6.5 Mechanical Integrity~~
~~Chapter: 11.0 Organization Roles, Responsibilities, and Authorities~~

DOE Guide DOE G 433.1-1, *Nuclear Facility Maintenance Management Program Guide for Use with DOE O 433.1*, as tailored in SRD Volume II, Appendix C

Regulatory Basis

DOE/RL-96-0006 4.3.5.1 Operational Testing, Inspection, and Maintenance
DOE/RL-96-0006 5.2.7 Mechanical Integrity
WAC 246-247 Radiation Protection - Air Emissions Location: Part 075 (12)

RPP-WTP Specific Tailoring

X.0 DOE Guide 433.1-1 Nuclear Facility Maintenance Management Program Guide for Use with DOE O 433.1

Revision: 5 September 2001
Sponsoring Organization: Department of Energy, Office of Nuclear Safety

RPP-WTP Specific Tailoring

The following tailoring of DOE Guide 433.1, *Nuclear Facility Maintenance Management Program Guide for Use with DOE O 433.1*, is required for use by the RPP-WTP contractor as an Implementing Standard for the preparation of the RTT-WTP Maintenance Program.

Section 4.4.3.2, Page 65 Preventive Maintenance

Replace the text with:

"Predictive maintenance will be integrated into the overall preventive maintenance program so that planned maintenance can be performed prior to equipment failure. Not all equipment conditions and failure modes can be applied. Reliable predictive maintenance will be selectively applied. Reliable predictive maintenance activities involves periodic monitoring in order to forecast component degradation so that (as needed) planned maintenance may be performed prior to equipment failure. Not all equipment conditions and failure modes can be monitored, therefore, predictive maintenance should be selectively applied. In addition, corrective maintenance efficiency may be improved by directing repair efforts (manpower, tooling, and parts) at problems detected using predictive maintenance techniques.

Predictive maintenance will be limited to components and systems that are significantly important to the safe and reliable operation of the plant. The program will collect, trend, and analyze data and initiate planned actions for degrading equipment. The effectiveness of the program is dependent on the accuracy of equipment degradation rate and time to failure assessment."

Justification: Clarification is needed to ensure that the RPP-WTP preventive maintenance program contains all the aspects of preventive maintenance.

* Section number and page numbers to be determined at time of incorporation into the SRD.

To ensure that the facility meets operational requirements, it is necessary to address issues associated with reliability, availability, maintainability, and inspectability.

Reliability is used as a measure of the ability of an item or system to complete a task, and it is normally expressed as a probability of failure. Reliability is designed in through the use of appropriate design techniques and control of the mode of operation and the environment. Design techniques to be used vary because they are dependent on the specific item or system and the task to be performed. Their purpose is to optimize reliability by the following:

1) Use of proven materials and components
2) Design simplicity
3) Testability
4) Control of manufacturing standards
5) Control of operational mode (e.g., prevention of misuse and overloads)
6) Control of environment (e.g., protection against corrosion and vibration)

Consistent with the RPP-WTP process for tailoring hazard controls using the potential radiological and chemical consequences of individual events, reliability is assigned to SSCs based upon the importance of the SSC to the prevention or mitigation of accidents. The significance of accident prevention and mitigation is determined by the severity of the accident to workers or the public. To implement this tailoring in a clear, consistent, and defensible manner, an Implementing Standard for Safety Standards and Requirements Identification was developed. This Implementing Standard includes a Severity Level ranking system which provides the hazard assessment and control teams with a defined way to categorize the potential severity of those events that can result in radiological or hazardous exposure to the workers or the public. The Implementing Standard provides the means by which the hazard assessment and control teams establish target reliabilities for SSCs.

Availability is a measure of the degree to which an item or system is in an operable condition. It is expressed quantitatively as the ratio of the mean time between failures to the sum of the mean time between failures and the mean time to repair. System availability is calculated to determine the potential for downtime. In this way, systems are identified that contribute to decreased availability. Required availability is achieved by specifying additional systems or increasing reliability of existing systems.

Maintainability is ~~a measure of the ability to restore a failed item or system to an operable condition in a specified time. Maintainability is designed into the facility and processes through use of appropriate design techniques, (e.g., the use of specially designed, remotely removable, and replaceable pumps and valves in process systems, and the placement of active pumps or valves within shielded accessible areas equipped with appropriate decontamination facilities that allow hands-on maintenance activities) and logistic support (e.g., scheduling and procedures). Benefits of these design techniques are that they simplify maintenance operations in high radiation areas and remove high maintenance equipment from high radiation areas. Testability of Safety Design Class systems and components is facilitated by such features as redundancy that allow for a system or component to be removed from service for maintenance or testing without loss of safety protection~~ the relative ease and economy of time and resources with which an item can be retained in, or restored to, a specified condition when maintenance is performed by personnel having specified skill levels, using prescribed procedures and resources, at each prescribed level of maintenance and repair. In this context, it is a function of design. Although other factors, such as highly trained people and a responsive supply system, can help keep downtime to an absolute minimum, it is the inherent maintainability that determines this minimum. Improving training or support cannot effectively compensate for the effect on availability of a poorly designed (in terms of maintainability) product. Minimizing the cost to support a product and maximizing the availability of that product are best done by designing the product to be reliable and maintainable.

IDENTIFICATION OF IMPLEMENTING STANDARDS FOR THE WTP MAINTENANCE PROGRAM

1 Purpose

The River Protection Project Waste Treatment Plant (WTP) project contract with the Department of Energy (DOE) [Ref. 1] and the project Safety Requirements Document (SRD) [Ref. 2] requires that the WTP contractor develop a maintenance program. The SRD requires the maintenance program to be compliant with the safety criteria (SC) presented in the SRD SC 7.6-1 through 7.6-4. With the transition of the WTP project to the Bechtel National, Inc (BNI) design, construction, and commissioning (DC&C) contract, the standard selected for the implementing standard for the project maintenance program was evaluated to determine if a new standard should be selected. This attachment to 24590-WTP-ABCN-ESH-01-006 documents this evaluation of the selection of a new implementing standard for maintenance.

2 Scope

The scope of this attachment is to document the results of a specially constituted Integrated Safety Management (ISM) Team for re-evaluation and identification of maintenance implementing standards. This attachment documents the results of a specially constituted ISM team for re-evaluation and identification of a maintenance program implementing standard. The attachments to 24590-WTP-ABCN-ESH-01-006 furnishes a summary of an integrated safety management process for identification of these standards, rationale for the re-evaluation and identification of the standard, and documentation to demonstrate the standard meet the ISM standards selection process acceptance criteria.

In support of re-evaluation of the implementing standard for a maintenance program a “standards selection process”, using the project ISM process, was undertaken in compliance with the DOE/RL-96-0004 [Ref. 5] regulatory process. The project-specific implementing standard for this regulatory process is detailed in Appendix A of the SRD, “Implementing Standard for Safety Standards and Requirements Identification”.

The identification of a maintenance program implementing standard was performed in compliance with the procedural requirements specified in project procedure 24590-WTP-GPP-SANA-002 [Ref. 6]. This procedure requires that identification of standards, other than engineering/design, manufacture/fabrication, and construction standards (e.g., standards for quality assurance, conduct of operations, etc.), is performed by specially constituted teams formed by the Process Management Team (PMT). This attachment documents the results of this specially constituted ISM team for re-evaluation and identification of maintenance implementing codes and standards.

3 Discussion

Based on the standards identification results of the ISM team and the PMT recommendation of the selected standard to the WTP Project Safety Committee (PSC) Chair, the PSC Chair requests the PSC confirm the selected set of standards. The PSC will define a confirmation review approach, carry out the review, and document the findings of the review. Comments by the PSC on standards identification will receive formal disposition by the PMT.

3.1 Approach

Upon confirmation of the ISM process-selected implementing standard for the maintenance program by the PSC and approval by the Project Manager, based on the PSC recommendation, the implementing standard will be proposed for DOE approval of an SRD update, via the project Authorization Basis Maintenance Process.

Following approval of the ABCN by the DOE Office of Safety Regulation (OSR), the results of the standards selection ISM process will be documented in the applicable SRD safety criteria for Maintenance.

3.1.1 ISM Team Composition

A multi-discipline ISM team provided recommendation of an implementing standard for the WTP Maintenance Program. This team[1] consisted of the following individuals:

Name	Title	Department
John Thomason, team chairperson	Maintenance Lead	Commissioning & Tng
Gary Grant	Manager, Quality Assurance	Quality Assurance
Mark Johnson	Mechanical Handling Engineer	Engineering
Clarence Smith	Maintenance Lead	Commissioning & Tng
Ken Gibson	Safety and Licensing Engineer	ES&H/Regulatory Safety

Note 1: The need to establish this team, selection of appropriate chairperson, and determination of scope of discipline involvement was confirmed at the PMT meeting held on June 1, 2001

3.1.2 Implementing Standards Selection Criteria

When properly implemented, the set of standards for incident reporting will:

1 Provide adequate safety
2 Comply with applicable laws and regulations
3 Conform with the Top-Level Safety Standards and Principles

At a minimum, the assessment team also considered the following contractual [Ref. 1] requirements for the radiological, nuclear, and process safety as excerpted from the contract Statement of Work, Section C, Standard 7, Item (2):

(i) The Contractor shall develop and implement an integrated standards-based safety management program to ensure that radiological, nuclear, and process safety requirements are defined, implemented, and maintained. Radiological, nuclear, and process safety requirements shall be adapted to the specific hazards associated with the Contractor's WTP activities.

(ii) The Contractor's integrated standards-based safety management program shall be developed to comply with the specific nuclear safety regulations defined in the effective rules of the 10 CFR 800 series of nuclear safety requirements and with the regulatory program established in the following four documents:

(A) DOE/RL-96-0003, *DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor*;

(B) DOE/RL-96-0004, *Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards and Requirements for the RPP Waste Treatment Plant Contractor*;

(C) DOE/RL-96-0005, *Concept of the DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor;* and

(D) DOE/RL-96-0006, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor.*

Changes to the four documents will be analyzed under RL/REG-98-14, *Regulatory Unit Position on New Safety Information and Back-fits*, and, if implemented, dispositioned in accordance with the Section I Clause entitled, *Changes*.

The integrated standards-based safety management program shall integrate the appropriate planning and practices elements specified in 29 CFR 1910.119, *Occupational Safety and Health Act of 1970, Process Safety Management of Highly Hazardous Chemicals*, to the extent that highly hazardous chemicals are present in quantities covered by 29 CFR 1910.119.

(iii) (only applicable to the Integrated Safety Management Plan)

(iv) The Contractor shall prepare and submit to DOE for review and approval, the radiological, nuclear, and process safety deliverables defined in Table S7-1, *Radiological, Nuclear, and Process Safety Deliverables.* Each deliverable is structured around the following six activities:

(A) Standards Approval;

(B) Initial Safety Evaluation;

(C) Authorization for Construction and Cold Commissioning;

(D) Authorization for Hot Commissioning;

(E) Oversight Process Determination; and

(F) Deactivation Safety Assessment.

3.2 Results of ISM Team Standards Selection Process

The ISM team reviewed the contract 'required' standards and a candidate set of implementing standards. This set of standards provided acceptable methods for implementing the requirements of the contract and the SRD. DOE Guide DOE G 433.1-1 fully meets the requirements for the WTP project. A listing of these candidate standards follows:

- Existing Standards Cited in the Integrated Safety Management Plan (ISMP, 24590-WTP-ISMP-ESH-01-001 Rev. 0, Sections 1.3.10, 1.3.11, 3.2, 3.4, 3.13, 3.16.3, 3.16.5, 3.16.6, 3.16.8, 4.2.1, 4.2.2, 5.3, 5.4, 5.6.5, 10.0, and 11.0)
- DOE Order 4330.4B (1994), *Maintenance Management Program*
- ASME Oma-S/G-1998, *Standards and Guides for Operation and Maintenance of Nuclear Power Plants*
- ISO 8107:1993, *Nuclear Power Plants Maintainability - Terminology*
- IAEA 50-SG-07, Rev 1, 1990, *Maintenance of Nuclear Power Plants*
- DOE Order 433.1, *Maintenance Management Program for DOE Nuclear Facilities*
- DOE Order 433.1, Attachment 1, *Contractor Requirements Document (CRD) DOE O 433.1, Maintenance Management Program for Nuclear Facilities*
- DOE Guide DOE G 433.1-1, *Nuclear Facility Maintenance Management Program Guide for Use with DOE O 433.1*

Based on the team evaluation of these candidate standards, against the standards selection criteria noted in Section 3.1.2, an adequate and appropriate standard that was selected by the team was the final candidate, the DOE guidance document DOE G 433.1-1.

This DOE guide document provides an implementation guide for use in developing a maintenance program for DOE facilities regulated under 10 CFR Part 830, "Nuclear Safety Management". Use of this guide supports compliance with DOE Order 433.1, *Maintenance Management Program for DOE Nuclear Facilities.* It was noted that the identified guidance document does not establish or invoke any new requirements.

Summary of Selected Implementing Standard

The ISM Team determined that, from the set of candidate implementation standards for maintenance, DOE Guide DOE G 433.1-1, *Nuclear Facility Maintenance Management Program Guide for Use with DOE O 433.1* provides an adequate implementing standard for maintenance needed to support the mission of the WTP.

Confirmation of the adequacy of the project-implementing standard for maintenance, using the DOE Guide DOE G 433.1-1, was provided by comparison to the standards acceptance criteria. The ISM Team made this confirmation through the application of the ISM ("0004") process.

The ISM Team assessed the selected implementing standard to confirm that it provides 1) adequate safety, 2) complied with applicable laws and regulations, and 3) conformed to the top-level safety standards and principles. A summary of how the selected standard met these three criteria, as well as how the implementing standards is consistent with the applicable safety criteria of the SRD requirements specified in the SRD Section 7.6 is presented in the following sections.

3.2.1 Adequate Safety

There are no proposed changes to the set of currently approved SRD safety criteria related to maintenance. The current set of DOE approved safety criteria requirements for maintenance is furnished in SRD safety criteria 7.6 -1 through 7.6-4. Use of DOE Guide DOE G 433.1-1 as the implementing standard for SRD Safety Criteria 7.6.1 through 7.6-4, was reviewed by the ISM team to confirm that adequate safety is still provided by using this standard for maintenance. This review was conducted through assessment of the scope and content of the implementing standard to ensure it provided adequate guidance to meet existing SRD safety criteria for maintenance.

The DOE Guide DOE G 433.1-1 as a comprehensive standard for maintenance at the DOE sites provides guidance to support maintenance covered in the SRD safety criteria. Use of the DOE Guide DOE G 433.1-1 provides additional assurance that the appropriate requirements of DOE Order 433.1 will be developed. Thus, use of this implementing standard demonstrates a continued commitment to adequate safety.

It was concluded that the scope, level of detail, and specification of an approach to the development of a maintenance program presented in the DOE Guide DOE G 433.1-1 satisfies the SRD safety criteria (see Section 3.2.4).

Thus, use of this implementing standard demonstrates a continued commitment to adequate safety.

The adequacy of these SRD safety criteria to support adequate safety is supported by prior DOE evaluation of the adequacy of these SRD safety criteria. The RU reviewed the original SRD safety criteria and reported the results in RL/REG-98-01. The conclusions of the review were that the project had established safety criteria (including SRD SC 7.6-1 through 7.6-4) that provided commitment to full compliance with the 10 CFR 800 series of nuclear safety requirements and the top level safety standards of DOE/RL-96-0006. Additionally the RU reviewed Revision 1A of the SRD safety criteria and reported the results in RL.REG-98-20, Revision 1. Specific to Condition #13, DOE stated that SRD Safety Criteria 7.6-2 and 7.6-3 must be revised to provide adequate subordinate standards because insufficient implementing description is provided for operational testing inspection and maintenance principle. DOE Guide DOE G 433.1-1, Section 4.8, Postmaintenance Testing and 4.13, Facility Condition Inspection provides the details for these requirements. Use of DOE Guide DOE G 433.1-1 as the implementing standard is consistent with SAR related commitments for maintenance in the ISMP.

3.2.2 Compliance with All Applicable Laws and Regulations

Selection of DOE Guide DOE G 433.1-1 as implementing standard is compliant with the 10 CFR 800 series of nuclear safety requirements.

3.2.3 Conformance to Top-Level Safety Standards

Top-level safety standards for maintenance are provided in DOE/RL-96-0006 [Ref. 4]. These “0006” standards related to maintenance are identified as follows, along with an assessment of how use of the selected implementing standard ensures conformance to these top-level safety standards.

DOE/RL-96-0006; Item 4.2.7.1 Reliability, Availability, Maintainability, and Inspectability (RAMI) - Reliability

Reliability targets should be assigned to structures, systems, and components or functions important to safety. The targets should be consistent with the roles of the structures, systems, and components or functions in different accident conditions. Provision should be made for appropriate testing and inspection of structures, systems, and components for which reliability targets have been set.

Evaluation: This principle is the subject of the requirements in SRD SC 7-6-3. DOE G 433.1-1, Section 4.4.2 details the use of reliability-centered maintenance for important systems and equipment and Section 4.4.3.2 provides the guidelines used in developing preventive maintenance program. These sections do not talk of "reliability targets", however do discuss level of reliability which is very similar. Additional guidance is provided in SRD Volume II, Appendix E, *Reliability, Availability, Maintainability, and Inspectability (RAMI).*

DOE/RL-96-0006; Item 4.3.5.1 Operational Testing, Inspection and Maintenance

Structures, systems, and components important to safety should be the subject of appropriate, regular preventive maintenance, inspection, and testing and servicing when needed, to ensure that they remain capable of meeting their design requirements throughout the life of the facility. Such activities should be carried out in accordance with written procedures supported by quality assurance measures.

Evaluation: This principle is the subject of the requirements in SRD SC 7-6-2, 7.6-3 and 7.6-4. DOE G 433.1-1, Section 3.2 (1) details the guidance that the maintenance program include those SSCs identified in the nuclear facility safety basis as documented in the SAR; SSCs that are critical to mission objectives or facility operations; or SSCs that may be desirable for inclusion in the maintenance program. Sections 4.2 (Types of Maintenance), 4.13 (Facility Condition Inspection), and 4.8 (Postmaintenance Testing) details the guidance for preventive maintenance, inspection and testing and servicing. Section 4.5 (Maintenance Procedures) details the guidance for procedure development, verification, validation, approval, and use. Further Section 3.2 details that the maintenance program is to be fully integrated with the QA Program.

DOE/RL-96-0006; Item 5.2.7 Mechanical Integrity

The Contractor should implement a mechanical integrity program that includes written procedures, training for maintenance activities, inspection and performance testing of process equipment, and quality assurance measures. The program should include measures to correct deficiencies in equipment that are outside acceptable limits.

Note: A mechanical integrity program is a major and necessary element in a process safety management program because of its importance in ensuring equipment integrity, eliminating potential ignition sources, and for determining that equipment is designed, installed, and operating properly.

Evaluation: This principle is the subject of the requirements in SRD SC 7-6-3. DOE G 433.1-1, Section 4.5 details guidance for written procedures; section 4.2 details the guidance for training and qualifications; section 4.13 details the guidance for inspection; and section 4.8 details the guidance for testing. As discussed throughout DOE G 433.1-1, quality assurance is built into throughout the maintenance program. The project *Quality Assurance Manual* (QAM) [Ref. 7] has been developed in accordance with 10 CFR 830 Subpart A and is an integral part of WTP programs. DOE G 433.1-1, Section 4.4.4 (Corrective Maintenance) details the aspects of those actions performed to restore failed or malfunctioning equipment to service.

3.2.4 Evaluation Against Applicable SRD Safety Criteria

The SRD safety criteria for maintenance are provided in the Safety Criteria in SRD Section 7.6-1 through 7.6-4. Safety criteria 7.6-1 through 7.6-4 address the maintenance requirements for the facility. There are no proposed changes to this set of currently approved SRD safety criteria, other than the selection of the new implementing standard. An evaluation, as summarized below, demonstrated the adequacy of the selected implementing standard in meeting these four safety criteria.

SRD Safety Criterion: 7.6-1

A maintenance program for the facility shall be developed and implemented using a tailored approach.

Evaluation: There are no statements in the proposed implementing standard that the maintenance program "be developed and implemented using a tailored approach. However, DOE G 433.1-1, Section 4.4.3.4.1 describes the selection and prioritization of facility systems based on importance to nuclear safety, reliability, and cost. Further the details of the criteria to be used in selecting and prioritizing SSCs is provided and includes importance to nuclear safety, potential for improved system or facility availability, regulatory concerns, historical and potential maintenance costs and personnel and resource requirements. Section 3.2 (1) details the guidance that the maintenance program include those SSCs identified in the nuclear facility safety basis as documented in the SAR; SSCs that are critical to mission objectives or facility operations; or SSCs that may be desirable for inclusion in the maintenance program. Since engineering SSCs will be selected during the ISM process, this "tailoring" of the SSC ensures that the maintenance program will be prepared for SSCs specific to the plant that have been tailored. Additionally, section 3.2 describes guidance for interfaces between the maintenance organization, engineering, quality assurance, training and industrial health, which will provide inputs, needed to provide additional tailoring of the maintenance program.

SRD Safety Criterion: 7.6-2

The maintenance program shall contain provisions sufficient to preserve, predict, and restore the availability, operability, and reliability of structures, systems, and components designated as Important to Safety.

Evaluation: DOE G 433.1-1, Section 3.2 (1) details the guidance that the maintenance program include those SSCs identified in the nuclear facility safety basis as documented in the SAR; SSCs that are critical to mission objectives or facility operations; or SSCs that may be desirable for inclusion in the maintenance program. Section 4.4 (Types of Maintenance) provides the details of the preventative, predictive, and corrective maintenance aspects of the maintenance program.

SRD Safety Criterion: 7.6-3

The maintenance program for Important to Safety Structures, systems and components shall clearly define:

(1) The Important to Safety structures, systems, and components that comprise the facility
(2) The requirements of the maintenance program that are derived from the program elements listed in Safety Criterion 7.6-4
(3) The management systems used for those activities, including the means for monitoring and measuring the effectiveness of the program and the management of maintenance backlog

(4) The assignment of responsibilities and authority for all levels of the maintenance organization
(5) Mechanisms to feedback such relevant information as trend analysis and instrumentation performance/reliability data in order to identify necessary program modifications
(6) Provisions for identifying and evaluating possible component, system design, occupational safety and health, or other relevant problems and implementation of a self-assessment program
(7) Performance indicators and criteria to be utilized to measure equipment, systems, and personnel effectiveness in maintenance activities
(8) Interfaces between maintenance and other organizations (e.g., involving operations, engineering, quality, and safety)
(9) Quantitative reliability target values for systems and components to start or run, when such values are credited in safety analysis
(10) Appropriate authorization is received before modification starts on a safety instrumented system
(11) Assessment of impact of the modification on the functionality of the safety instrumented system is performed, to ensure functionality is not impaired

Evaluation: DOE G 433.1-1, Section 3.2 (1) details the guidance that the maintenance program include those SSCs identified in the nuclear facility safety basis as documented in the SAR; SSCs that are critical to mission objectives or facility operations; or SSCs that may be desirable for inclusion in the maintenance program. [Item (1)]. Sections 4.1 through 4.17 provide the details of the guidance of each corresponding item in SC 7.6-4. [Item (2)]. Section 3.2(2) details the guidance that the maintenance program include management systems used to control maintenance activities associated with the defined SSC. [Item (3)]. Section 3.2(3) details the guidance that the maintenance program include the assignment of organizational roles and responsibilities and appropriate maintenance-related training and qualification requirements. [Item (4)]. Section 4.14.3.8 details the guidance for a feedback system that includes planners, engineers, crafts workers, warehouse personnel, appropriate line management and others so that participation in improvement is promoted at all levels of the maintenance and management organizations. [Item (5)]. Section 4.14.3.9 details the guidance for inspections, audits, reviews, investigations, and self-assessments utilized to assist in the identification and correction of program deficiencies. Each program element is to evaluated with emphasis on overall effectiveness and to address correcting any coordination problems causing work delays that reduce productivity. [Item (6)]. Section 3.2(9) details the guidance that the maintenance program include performance indicators. Additional details on performance indicators, goals and objective are provided in section 4.14.3.2. [Item (7)]. Section 3.2(4) details the guidance that the maintenance program include interfaces between the maintenance organization and operations, engineering, quality, training and industrial safety. [Item (8)]. While reliability target values is not specifically discussed in DOE G 433.1, Section 4.4.2 details the guidance of reliability-centered maintenance for important systems and equipment and Section 4.4.3.2 provides the guidelines used in developing preventive maintenance program. [Item (9)]. Section 4.17 details the guidance that the maintenance program include for modification work. A section 4.17.3.5 describes the necessary evaluation and section 4.17.3.6 describes the necessary approval by the owner/operator before installation. [Item (10)]. Section 4.17.2 details the guidance that an assessment of impact be performed for all modification work. [Item (11)].

SRD Safety Criterion: 7.6-4

The maintenance program shall address each of the following elements:

(1) Organization and administration
(2) Maintenance training and qualification

(3) Maintenance facilities, equipment, and tools
(4) Types of maintenance
(5) Maintenance procedures and other work-related documents
(6) Planning, scheduling, and coordinating maintenance activities
(7) Control of maintenance activities
(8) Post-maintenance testing
(9) Procurement of parts, materials, and services
(10) Material receipt, inspection, handling, storage, retrieving, and issuance
(11) Control and calibration of measuring and test equipment
(12) Maintenance tools and equipment control
(13) Documented facility condition inspections to identify and address aging effects
(14) Management involvement with facility operations
(15) Maintenance history and trending
(16) Analysis of maintenance-related problems
(17) Modification work.

Evaluation: DOE G 433.1-1, Sections 4.1 (Maintenance Organization and Administration), 4.2 (Training and Qualification of Maintenance), 4.3 (Maintenance Facilities, Equipment, and Tools), 4.4 (Types of Maintenance), 4.5 (Maintenance Procedures), 4.6 (Planning, Scheduling, and Coordinating Maintenance), 4.7 (Control of Maintenance Activities), 4.8 (Postmaintenance Testing), 4.9 (Procurement of Parts, Materials, and Services), 4.10 (Material Receipt, Inspection, Handling, Storage, Retrieval, and Issuance), 4.11 (Control and Calibration of Measuring and Test Equipment), 4.12 (Maintenance Tools and Equipment Control), 4.13 (Facility Condition Inspection), 4.14 (Management Involvement), 4.15 (Maintenance History), 4.16 (Analysis of Maintenance Problems), and 4.17 (Modification Work) provides the details of guidance for each of the corresponding items listed in SC 7.6-4.

4 Conclusions

The ISM Team determined that the DOE Guide DOE G 433.1-1 provides an adequate and appropriate implementing standard for maintenance for the WTP. The ISM Team determined that the DOE guide provides adequate safety, complies with applicable laws and regulations, and conforms to the Top-Level Safety Standards and Principles. Use of this implementing standard was found by the ISM Team to be consistently reflected in the maintenance program related commitments contained within the ISMP.

5 Recommendations

The DOE Guide DOE G 433.1-1, as tailored in SRD Volume II, Appendix C should be recommended by the Process Management Team to the Project Safety Committee for confirmation as the implementing standard for SRD SC 7.6-1 through 7.6-4.

6 References

1. DOE Contract DE-AC27-01RV14136, December 2000, U.S. Department of Energy, Office of River Protection, Richland, Washington
2. *Safety Requirements Document*, 24590-WTP-SRD-ESH-01-001-02, Revision 0, Bechtel National, Inc., Richland, Washington. (Revision 0 issued September 2001).
3. 10 CFR 830 Subpart A, "Quality Assurance Requirements", *Code of Federal Regulations*, as amended.
4. *Top-level Radiological, Nuclear, and Process Safety Standards and Principles for TWRS Privatization Contractors*, DOE/RL-96-0006, Revision 1, July 1998, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
5. *Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards, and Requirements for TWRS Privatization,* DOE/RL-96-0004, Revision 1, July 1998, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
6. River Protection Project Waste Treatment Plant Project Procedure, 24590-STP-GPP-SANA-002, "Hazard Analysis, Development of Hazard Control Strategies, and Identification of Standards", Rev. 0, 9/28/01.
7. *Quality Assurance Manual*, 24590-WTP-QAM-QA-01-001, Bechtel National, Inc., Richland, Washington (Revision 0 issued August 2001).

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
7.6-1 A maintenance program for the facility shall be developed and implemented using a tailored approach.	4.2.1 Engineered Features Engineered features include SSCs that provide for public and worker safety. The design, fabrication, construction, installation, testing, operation, maintenance, and quality assurance requirements for engineered features are tailored by the classification process discussed in ISMP Section 1.3.10, “Classification of Structures, Systems, and Components”.	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	There are no statements in the proposed implementing standard that the maintenance program “be developed and implemented using a tailored approach. However, DOE G 433.1-1, Section 4.4.3.4.1 describes the selection and prioritization of facility systems based on importance to nuclear safety, reliability, and cost. Further the details of the criteria to be used in selecting and prioritizing SSCs is provided and includes importance to nuclear safety, potential for improved system or facility availability, regulatory concerns, historical and potential maintenance costs and personnel and resource requirements. Section 3.2 (1) details the guidance that the maintenance program include those SSCs identified in the nuclear facility safety basis as documented in the SAR; SSCs that are critical to mission objectives or facility operations; or SSCs that may be desirable for inclusion in the maintenance program. Since engineering SSCs will be selected during the ISM process, this “tailoring” of the SSC ensures that the maintenance program will be prepared for SSCs specific to the plant that have been tailored. Additionally, section 3.2 describes guidance for interfaces between the maintenance organization, engineering, quality assurance, training and industrial health, which will provide inputs, needed to provide additional tailoring of the maintenance program. SRD SC 1.0-8 provides the definitions for important to safety that includes safety design class and safety design significant. SRD Volume II, Appendix A defines the ISM process for selection of important to safety ITS.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
7.6 -2 The maintenance program shall contain provisions sufficient to preserve, predict, and restore the availability, operability, and reliability of structures, systems, and components designated as Important to Safety.	3.13 Reliability, Availability, Maintainability, and Inspectability (RAMI) To ensure that the facility meets operational requirements, it is necessary to address issues associated with reliability, availability, maintainability, and inspectability. Reliability is used as a measure of the ability of an item or system to complete a task, and it is normally expressed as a probability of failure. Reliability is designed in through the use of appropriate design techniques and control of the mode of operation and the environment. Design techniques to be used vary because they are dependent on the specific item or system and the task to be performed. Their purpose is to optimize reliability by the following: 1 Use of proven materials and components 2 Design simplicity 3 Testability 4 Control of manufacturing standards 5 Control of operational mode (e.g., prevention of misuse and overloads) 6 Control of environment (e.g., protection against corrosion and vibration). Consistent with the process for tailoring hazard controls using the potential radiological and chemical consequences of individual events, reliability is assigned to SSCs based upon the importance of the SSC to the prevention or mitigation of accidents. The significance of accident prevention and mitigation is determined by the severity of the accident to workers or the public. To implement this tailoring in a clear, consistent, and defensible manner, an Implementing Standard for Safety Standards and Requirements Identification was developed. This Implementing Standard includes a Severity Level ranking system which provides the hazard assessment and control teams with a defined way to categorize the potential severity of those events that can result in radiological or hazardous exposure to the workers or the public. The Implementing Standard provides the means by which the hazard assessment and control teams establish target reliabilities for SSCs. Availability is a measure of the degree to which an item or system is in an operable condition. It is expressed quantitatively as the ratio of the mean time between failures to the sum of the mean time between failures and the mean time to repair. System availability is calculated to determine the potential for downtime. In this way, systems are identified that contribute to decreased availability. Required availability is achieved by specifying additional systems or increasing reliability of existing systems. Maintainability is a measure of the ability to restore a failed item or system to an operable condition in a specified time. Maintainability is designed into the facility and processes through use of appropriate design techniques, (e.g., the use of specially designed, remotely removable, and replaceable pumps and valves in process systems, and the placement of active pumps or valves within shielded accessible areas equipped with appropriate decontamination facilities that allow hands-on maintenance activities) and logistic support (e.g., scheduling and procedures). Benefits of these design techniques are that they simplify maintenance operations in high radiation areas and remove high maintenance equipment from high radiation areas.	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	DOE G 433.1-1, Section 3.2 (1) details the guidance that the maintenance program include those SSCs identified in the nuclear facility safety basis as documented in the SAR; SSCs that are critical to mission objectives or facility operations; or SSCs that may be desirable for inclusion in the maintenance program. Section 4.4 (Types of Maintenance) provides the guidance details of the preventative, predictive, and corrective maintenance aspects of the maintenance program. Except for the paragraph on Maintainability and the example provided the text of the ISMP section 3.13 is essentially duplicated in SRD Volume II, Appendix E.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
	Testability of Safety Design Class systems and components is facilitated by such features as redundancy that allow for a system or component to be removed from service for maintenance or testing without loss of safety protection. Inspectability is the measure of the ease with which items or systems can be inspected for preventative maintenance or assessment of condition. Inspectability is used to monitor facility items in order to maintain their reliability. Inspectability of facility items can be designed in by the use of shielded access areas (as above, to reduce radiation exposure) for active equipment or the provision of monitoring equipment (e.g., material coupons for determining vessel corrosion rates, and in-cell cameras). During the design phase, the RPP-WTP and processes are evaluated for reliability, availability, maintainability, and inspectability. BNI uses a number of validated modeling techniques (computer codes, mathematical modeling, failure modes, and effects analysis) for determining reliability and availability of the facility and processes. These are used to identify those facility and process areas that are sensitive with respect to influencing overall facility and process performance. Optimum reliability is established by the use of appropriate standards and quality control. The determination of maintenance and inspection needs is based on facility and process reliability requirements. It is a mixture of process optimization, provision of appropriate design features to aid preventative and scheduled maintenance and inspection, and the development of maintenance and inspection programs (administrative and procedural controls) whose objectives among other things, are to facilitate these activities. Reliability targets are assigned to SSCs only when a quantitative value has been credited for the reliability of an SSC in safety analysis. A hypothetical example of the application of RAMI to the RPP-WTP is the cooling water supply system to the technetium/cesium product storage tank. Cooling water is supplied to the this vessel to keep the contents from boiling thereby preventing the release of radionuclides and steam to the ventilation system. Failure of the cooling water system supply could lead to a hazardous situation or, at the least, operability concerns. The system comprises a closed-cycle primary system supplying chilled water to cooling coils within the vessel. Chilled water is supplied via a secondary chilled water circuit and heat exchanger. It should be noted that physical considerations indicate that the tank contents may reach their boiling temperature, but the predicted time required is on the order of several days. A conservative estimate of the minimum time to boiling assumes there is no heat transfer from the tank (ISAR Section 4.7.2.4, "Technetium/Cesium Product Storage Tank"). This supply system is analyzed using a commercially available computer program. The system is first broken down into major components (e.g., pumps and valves); for each component reliability data are obtained and an acceptable repair time specified. The computer model calculates total availability of the system throughout the "operating life" of many years. The overall reliability of the system is then determined by application of fault tree analysis. Failure rates for postulated faults are determined and sensitive items of the system with respect to failures are identified. No maintainability of the in-cell components (primary circuit) is required, as the design takes this into account (e.g., all welded pipework and enhanced testing). Inspection of the primary circuit takes place either indirectly through the use of coupons within the circuit to assess corrosion rates of the pipework and cooling coils or directly through visual (closed circuit television) means.		

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
7.6-3 The maintenance program for Important to Safety Structures, systems and components shall clearly define: 1 The Important to Safety structures, systems, and components that comprise the facility 2 The requirements of the maintenance program that are derived from the program elements listed in Safety Criterion 7.6-4 3 The management systems used for those activities, including the means for monitoring and measuring the effectiveness of the program and the management of maintenance backlog 4 The assignment of responsibilities and authority for all levels of the maintenance organization 5 Mechanisms to feedback such relevant information as trend analysis and instrumentation performance/reliability data in order to identify necessary program modifications 6 Provisions for identifying and evaluating possible component, system design, occupational safety and health, or other relevant problems and implementation of a self-assessment program	1.3.10 Classification of Structures, Systems, and Components The design classification process used on the Project provides a consistent, project-wide approach for the classification of the RPP-WTP SSCs based on their importance to controlling normal releases and accident prevention and mitigation. This approach ensures that SSCs are designed, constructed, fabricated, installed, tested, operated, and maintained to quality standards commensurate with the importance of the functions that need to be performed. As the facility moves to deactivation, and the safety functions change, the classification of SSCs will be revised as necessary. The design classification system provides assurance to DOE that the defined safety functions of SSCs will perform as intended. In this system, SSCs are designated as Important-to-Safety in accordance with the definition of this term as provided in *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for TWRS Privatization Contractors* (DOE-RL 1996b). SSCs defined as Important-to-Safety for the RPP-WTP include the following. 1 SSCs needed to prevent or mitigate accidents that could exceed public or worker radiological and chemical exposure standards of Table 1-2 and SSCs needed to prevent criticality. This set of SSCs includes both the front line and support systems needed to meet these exposure standards or to prevent criticality. This set of Important-to-Safety SSCs are designated as Safety Design Class. 2 SSCs needed to achieve compliance with the radiological or chemical exposure standards for the public and workers during normal operation; and SSCs that place frequent demands on, or adversely affect the function of, Safety Design Class SSCs if they fail or malfunction. This set of Important-to-Safety SSCs are designated as Safety Design Significant. The processes for identifying the SSCs for each of the two groups of SSCs Important-to-Safety and the requirements assigned to each of the two groups are discussed below. Safety Design Class SSCs typically are identified by the results of accident analyses that show the potential for exposure standards to be exceeded. However, additional items also are designated Safety Design Class independent of a specific accident analysis. These are items that protect the facility worker from potentially serious events. Typically, these events are deemed to present a challenge to the facility worker severe enough that mitigation is prudent, without the need to perform a specific consequence analysis. These latter items are identified by the results of the HAR. Safety Design Significant SSCs are identified in several ways including: (1) SSCs identified as significant contributors to safety by the risk analyses that confirm the facility accident risk goals are met (this is one way to identify SSCs that place frequent demands on, or adversely affect the function of, Safety Design Class SSCs if they fail or malfunction), (2) SSCs that are needed to ensure that standards for normal operation are not exceeded (e.g., bulk shield walls or radiation monitors), (3) SSCs selected based on the dictates of nuclear and chemical facility experience and prudent engineering practices, and (4) SSCs whose failure could prevent Safety Design Class SSCs from performing their safety function (e.g., Seismic II/I items).	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	DOE G 433.1-1, Section 3.2 (1) details the guidance that the maintenance program include those SSCs identified in the nuclear facility safety basis as documented in the SAR; SSCs that are critical to mission objectives or facility operations; or SSCs that may be desirable for inclusion in the maintenance program. [Item (1)]. Sections 4.1 through 4.17 provide the details of the guidance of each corresponding item in SC 7.6-4. [Item (2)]. Section 3.2(2) details the guidance that the maintenance program include management systems used to control maintenance activities associated with the defined SSC [Item (3)]. Section 3.2(3) details the guidance that the maintenance program include the assignment of organizational roles and responsibilities and appropriate maintenance-related training and qualification requirements [Item (4)]. Section 4.14.3.8 details the guidance for a feedback system that includes planners, engineers, crafts workers, warehouse personnel, appropriate line management and others so that participation in improvement is promoted at all levels of the maintenance and management organizations [Item (5)]. Section 4.14.3.9 details the guidance for inspections, audits, reviews, investigations, and self-assessments utilized to assist in the identification and correction of program deficiencies. Each program element is to evaluated with emphasis on overall effectiveness and to address correcting any coordination problems causing work delays that reduce productivity [Item (6)]. Section 3.2(9) details the guidance that the maintenance program include performance indicators. Additional details on performance indicators, goals, and objective are provided in section 4.14.3.2. [Item (7)]. Section 3.2(4) details the guidance that the maintenance program include interfaces between the maintenance organization and operations, engineering, quality, training and industrial safety [Item (8)]. While reliability target values is not specifically discussed in DOE G 433.1, Section 4.4.2 details the guidance of reliability-centered maintenance

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
7 Performance indicators and criteria to be utilized to measure equipment, systems, and personnel effectiveness in maintenance activities 8 Interfaces between maintenance and other organizations (e.g., involving operations, engineering, quality, and safety) 9 Quantitative reliability target values for systems and components to start or run, when such values are credited in safety analysis 10 Appropriate authorization is received before modification starts on a safety instrumented system 11 Assessment of impact of the modification on the functionality of the safety instrumented system is performed, to ensure functionality is not impaired	SSCs identified in ISAR Section 4.8, "Controls for Prevention and Mitigation of Accidents" as Design Class I and II are Safety Design Class SSCs. SSCs provided to protect the health and safety of the public and collocated workers usually are considered to also provide adequate protection of the environment. As stated in ISAR Section 4.8, "The selection of engineered and administrative controls is based on the conceptual design of the facility. Additional or different features may be identified during Part B". The more complete group of Important-to-Safety SSCs will be identified in Part B and provided in the Preliminary Safety Analysis Report (PSAR) as part of the Construction Authorization Request. The PSAR and the Final Safety Analysis Report also will describe SSCs that are not designated as Important-to-Safety. The descriptions of these SSCs will note that they are not classified as Important-to-Safety. When a SSC is designated as Safety Design Class it has the following attributes: 1 Quality Level 1 (QL-1) is applied to the SSC. The QAP describes the requirements associated with QL-1. 2 For an active system or component, the safety function is preserved by application of defense-in-depth such that failure of the system or component will not result in exceeding a public or worker accident exposure standard. For a mitigating feature, this means that, given that the accident has occurred, the consequence of the accident will not result in exceeding a public or worker exposure standard. For a preventative feature, this means that the failure of the system or component will not allow the accident to occur and progress such that a public or worker accident exposure standard is exceeded. This requirement may be achieved by designing the Safety Design Class system or component to withstand a single active failure or by designating two separate and independent systems or components as Safety Design Class. 3 The SSC is designed to withstand the effects of natural phenomena such that it can perform any safety functions required as a result of a natural phenomena event. For example, if an earthquake can produce exposures to the public or workers in excess of standards, the Safety Design Class SSC that prevents or mitigates the exposures would be designed to be DBE-resistant and designated as Seismic Category I. However, DBE-resistance is not applied automatically to Safety Design Class SSCs. It is applied only when the earthquake is the initiating event, or when the earthquake could cause the initiating event. A Safety Design Class SSC that does not have a DBE mitigating function is designated as Seismic Category III. This natural phenomenon hazard (NPH) design philosophy is used for all severe natural phenomena events (i.e., earthquake, flood, high wind). Therefore, if a Safety Design Class SSC is needed for meeting public or worker exposure standards for a given NPH event, the NPH loads associated with that event are taken from SRD Volume II, Table 4-1, "Natural Phenomena Design Loads for Important-to-Safety SSCs with NPH Safety Functions". All other NPH loads for the Safety Design Class SSC may be taken from SRD Volume II, Table 4-2, "Natural Phenomena Design Loads for SSCs without NPH Safety Functions" in lieu of SRD Table 4-1. 4 General design requirements are applied as identified in Section 4.0 of the SRD for Safety Design Class SSCs. See SRD Safety Criterion 4.1-5 as an example.		for important systems and equipment and Section 4.4.3.2 provides the guidelines used in developing preventive maintenance program [Item (9)]. Section 4.17 details the guidance that the maintenance program include for modification work. A section 4.17.3.5 describes the necessary evaluation and section 4.17.3.6 describes the necessary approval by the owner/operator before installation [Item (10)]. Section 4.17.2 details the guidance that an assessment of impact be performed for all modification work [Item (11)]. SRD SC 1.0-8 provides the definitions for important to safety that includes safety design class and safety design significant. SRD Volume II, Appendix A defines the ISM process for selection of important to safety ITS.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
	5 Specific design requirements based on the type of component are applied as invoked in SRD Chapter 4.0. For example, SRD Safety Criterion 4.4-5 provides requirements associated with Safety Design Class air treatment systems. 6 Other design requirements may be applied based on the specific safety function to be performed by the Safety Design Class SSC. This specific safety function is determined from the accident analysis that identified the need for prevention or mitigation by Safety Design Class SSCs. 7 Operational requirements (e.g., periodic testing and preventative maintenance) are applied to Safety Design Class SSCs through the application of Technical Safety Requirements (discussed in ISMP Section 4.2.3.4 "Technical Safety Requirements"). When a SSC is classified as Safety Design Significant it is has the following attributes. 1 Quality Level 2 (QL-2) is applied to the SSC. The QAP describes the requirements associated with QL-2. 2 The SSC is designed to withstand the effects of natural phenomena such that it can perform its safety functions required as a result of a natural phenomena event. If an earthquake can produce exposures to the public or workers in excess of standards, the Safety Design Class SSC that prevents or mitigates the exposures would be designed DBE-resistant as discussed above. The same NPH loads also are applied to a Safety Design Significant SSC if failure of the item could prevent the Safety Design Class SSC from performing its safety function required as a result of the DBE. Such an SSC is designated Seismic Category II. It should be noted, however, that DBE resistance is not automatically applied to Safety Design Significant SSCs. It is applied only when the earthquake is the initiating event, or when the earthquake could cause the initiating event. A Safety Design Significant SSC that does not have a DBE mitigating function is designated Seismic Category III. This NPH design philosophy is used for all severe natural phenomena events (i.e., earthquake, flood, high wind). Therefore, if a Safety Design Significant SSC is needed to meet public or worker exposure standards for a given NPH event, the NPH loads associated with that event are taken from SRD Volume II, Table 4-1, "Natural Phenomena Design Loads for Important-to-Safety SSCs with NPH Safety Functions". All other NPH loads for the Safety Design Significant SSC may be taken from SRD Volume II, Table 4-2, "Natural Phenomena Design Loads for SSCs without NPH Safety Functions" in lieu of SRD Table 4-1. 3 General and specific design requirements are applied as identified in Section 4.0 of the SRD for Safety Design Significant SSCs. 4 Other design requirements again may be applied based on the specific safety function to be performed by the Safety Design Significant SSC.		

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
SAME AS ABOVE	3.2 Safety Responsibilities BNI recognizes its corporate responsibility for safety during the design, construction, and commissioning (DC&C) phase of the project. Safety responsibilities are assigned to and by the Project Manager. The DC&C responsibilities are assigned to functional areas as shown in ISMP Tables 9-1 through 9-3. The roles assigned to organizations are provided in ISMP Chapter 11.0, "Organization Roles, Responsibilities, and Authorities". By these assignments, facility safety becomes a facility-wide responsibility with safety responsibilities identified for each functional area. In addition, by these assignments, assurance is provided that the roles identified in the Safety Analysis Reports are carried out. The Facility design is based on the design and operational experience gained at other nuclear and chemical facilities. As such, the potential hazards are well understood and lessons learned from earlier facilities are applied. Part of the preparatory work for hazard identification studies is to review safety and incident reports from similar operating facilities to ensure that credible events are considered at an early stage in the design. For the RPP-WTP, the operating histories of Sellafield's Vitrification Plants, Site Ion Exchange Plant, the Enhanced Actinide Removal Plant, the Savannah River Project, and the Hanford Site plants are reviewed to take account of their operating experience. In this way, lessons learned are incorporated into the RPP-WTP design and plans for operation. One such example is ion exchange resin stability. An explosion occurred at the Hanford Z-Plant because of contact between an organic ion exchange resin and strong nitric acid (HRC 1976). Because the RPP-WTP uses both organic ion exchange resins and strong nitric acid within its processes, careful consideration is being given to design of ion exchange resin handling and storage for the RPP-WTP. Section 4.4.1, "Comparison to the Hazards Analysis Results of Other Facilities", of the Hazard Analysis Report (HAR) provides a discussion of the application of lessons learned at other facilities to the Facility process hazards analysis (PHA) and design.	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	SRD SC 7.0-4 defines the contractor responsibility for safety during all phases of the project.
SAME AS ABOVE	3.4 Safety/Quality Culture The BNI team understands the importance of a strong safety and quality culture in achieving excellence. To achieve a culture in which individuals involved in safety-related activities accept responsibility for the safety and quality through all phases of the Project, BNI establishes the following policy: 1 Outlining expectations and performance standards 2 Communicating those expectations 3 Implementing procedures that facilitate achieving expectations 4 Performing assessments to measure the compliance with and the appropriateness of BNI safety goals.	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	In addition to SRD SC 1.0-9 and 7.0-4 that define the safety responsibilities for the project, SRD SC Section 7.3 defines the quality assurance requirements. The requirements for quality assurance that is accordance with 10 CFR 830, Subpart A is identified in the section 4.16.4 of the proposed standard.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
	To achieve safety and quality throughout design, construction, and operation of the facility, BNI establishes measurable goals in the areas of industrial health and safety of workers, radiological and chemical exposure limits for the public and workers, and environmental release limits. The team then establishes policies that require the communication of the goals to employees and contractors. Communication techniques include posters, meetings, newsletters, recognition of outstanding performance, and incorporation of the goals into performance plans for groups and individuals. Another important aspect of communication is training. Employees are provided information regarding the inherent hazards of the work and tools effective in controlling the hazards or responding to hazardous situations encountered during the work processes. Managers and supervisors are expected to be familiar with the work processes and to understand the potential hazards and hazardous situations. Other policies that establish standards of conduct and job site work rules are communicated to employees. The policies empower RPP-WTP employees to stop the activity in which they are involved if the work procedure or process is not clear or the activity appears unsafe. The policies also direct that performance reviews emphasize the requirements for safety and quality. The safe completion of a quality job requires planning that takes into consideration aspects such as adequate work packages, appropriate level of instructions, evaluation of the impact of the task on other SSCs or processes, and an evaluation of the completed activity. Procedures governing these activities specify that trained and qualified personnel are required to participate in planning process. This includes craft and operations personnel supporting technical and administrative workers. To ensure that safety and quality procedures are being followed and that the implemented procedures are adequate to facilitate achieving the expectations, assessments of work activities performed and the results of compliance with goals are conducted. Where practices are identified that improve safety and quality, those practices are incorporated into operations. Any required corrective actions identified are tracked to completion. Results of these assessments are provided to managers and workers. As the project moves through design and operations to deactivation, the BNI team revises the goals and procedures to reflect the activities required for each phase.		
SAME AS ABOVE	3.13 Reliability, Availability, Maintainability, and Inspectability (RAMI) **SAME AS ABOVE**	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	Except for the paragraph on Maintainability and the example provided the text of the ISMP section 3.13 is essentially duplicated in SRD Volume II, Appendix E.
SAME AS ABOVE	3.16.3 Incident Investigations Incident investigations involve the identification, categorization, notification, reporting, and processing of information related to incidents, emergency events, and accidents associated with the RPP-WTP. Incident reports are sent to the DOE Occurrence Reporting and Processing System. Although the incident reporting process is usually initiated with operation of a nuclear facility, the process is developed and implemented for the RPP-WTP construction and testing activities in preparation for operation.	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	SRD SC Section 7.7 defines the incident investigation requirements for the project.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
	The incident investigation and reporting procedures, and the training to these procedures, ensure that the RPP-WTP regulator, the DOE Program Office, and RPP-WTP management are kept informed on a timely basis, of events and conditions during construction, testing, and operational activities that could adversely affect quality assurance, security, environment, operations, or the health and safety of the public and workers. Incident reports are evaluated for a potential noncompliance to a nuclear safety requirement reportable by the requirements of 10 CFR 820 “Procedural Rules for DOE Nuclear Activities”. For an incident that indicates a potential inadequacy of previous safety analyses as defined in an approved safety analysis report or that indicates a possible reduction in safety margins as defined in the TSRs, actions are taken to place or maintain the facility in a safe state and a safety evaluation is performed. The completed safety evaluation is submitted to the regulator before removing any operational restrictions initiated in response to the incident. Additional detail on incident investigations is included in ISMP Section 5.6.7, “Investigation of Incidents” and ISAR Section 3.7, “Incident Investigations”.		
SAME AS ABOVE	3.16.5 Performance Monitoring Performance monitoring is used at the RPP-WTP to verify that ES&H and other RPP-WTP programs, plans, and procedures exist; are in place; are adequate; are functioning as designed; and are in compliance with applicable regulatory or permit requirements. Performance monitoring is conducted by a RPP-WTP multidisciplinary team consisting of quality assurance, environmental protection, industrial safety, process safety, health physics, nuclear safety, and regulatory staff. Performance monitoring includes, but is not limited to, reviewing records, plans, and procedures; visually observing operations/activities; and interviewing key personnel. Findings are provided in written reports with recommendations for improvements as applicable. During design and construction, the findings are provided to the Project Manager and during pre-operational testing, operation, and deactivation, the findings are provided to the Facility Manager. Performance monitoring is conducted to ensure high standards of performance in the following areas: 1 RPP-WTP site monitoring program 2 Health and safety program 3 Personnel training program 4 Employee concerns program 5 Hazardous material inventory and waste tracking systems 6 Facility safety requirements 7 Conduct of operations and maintenance 8 Environmental program 9 Housekeeping	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	The guidance for performance monitoring is identified in the section 4.14 of the proposed standard. Maintenance performance objectives are discussed in sections 4.4.3, 4.4.6, and 4.4.7.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
	10 Employee compliance to established safety and quality criteria (See ISMP Section 3.4, "Safety/Quality Culture") 11 Quality Assurance Program.		
SAME AS ABOVE	3.16.6 Performance Indicators Performance indicators for safety and environmental protection objectives are established for the Project. Performance is monitored on a periodic basis to determine progress of the Project in achieving these indicators. Examples of performance indicators are as follows: 1 A change in the number of lost-time accidents and recordable injuries 2 Radiological exposures of facility personnel 3 Radiation workers exceeding a specified annual exposure level 4 Operation outside the established limits for discharge and disposal of waste 5 Entry into TSR actions statements for reasons other than TSR-required surveillance 6 Violations of TSRs 7 Findings of audits and assessments 8 Unusual incidents 9 Maintenance backlog 10 Effectiveness of the maintenance program (e.g., time to repair, control room annunciators, and equipment out of service) 11 Fire impairments.	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	The guidance for performance indicators is identified in the section 4.14 of the proposed standard.
SAME AS ABOVE	3.16.8 Feedback and Trending As described above, incidents occurring in the RPP-WTP are used as lessons learned to feed relevant information back to appropriate RPP-WTP staff members and the training programs to assist in precluding recurrence. The lessons learned are applied in a broad manner within the RPP-WTP, rather than focused only on the specific administrative or engineered control involved in the incident. Significant lessons learned are provided to the Project Manager during design and construction and to the Facility Manager during operation and deactivation. Trending within various performance areas, such as operations, training, and maintenance, is used to verify that continuous improvement is being achieved in the Project. In the event that repeat events, findings, or other deficiencies are indicated, follow-up actions are initiated to identify additional corrective actions needed to preclude further recurrence. These additional corrective actions are tracked to completion and their adequacy to correct adverse trends is verified. Adverse trends are also evaluated to determine the existence of a programmatic failure of nuclear safety requirements subject to reporting in accordance with 10 CFR 820, "Procedural Rules for DOE Nuclear Activities".	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	The guidance for feedback and trending is identified in the sections 4.4.3.15 and 4.14.3.8 of the proposed standard.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
SAME AS ABOVE	10.0 Assessments Assessments of the Project verify that public and worker safety considerations are reflected in the design, procurement, construction, commissioning, operation, and deactivation of the facility. The role of safety committees in achieving these objectives is discussed in Integrated Safety Management Plan (ISMP) Section 3.16.1, "Safety Committees". Assessments in compliance with 10 CFR 830.120(c)(3)(i) and (c)(3)(ii) involve the following: 1 Management assessments. Managers assess their management processes so that problems that hinder the organization from achieving its objectives are identified and corrected. These assessments are discussed in Section 10.1, "Management Assessments". 2 Independent assessments. Independent assessments are performed to measure item and service quality, measure the adequacy of work performance, and promote improvement. These assessments are discussed in Section 10.2, "Independent Assessments". During the design and construction phase, assessments are directed at such activities as: 1 The development of regulatory documents 2 Performance of safety analysis 3 Qualification of personnel, training, and procedures as related to design and construction 4 Design control 5 Construction work packages 6 Worker safety 7 Fire protection 8 Equipment procurement. Assessments during operation and deactivation provide oversight of these same areas and extend to the following areas: 1 Radiation control 2 Unreviewed safety questions evaluations 3 Compliance with the authorization basis 4 Maintenance training and work performance 5 Hazardous waste management 6 Emergency exercises 7 Compliance to deactivation end point criteria 8 Fire protection.	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	The guidance for assessments is identified in the section 4.14 of the proposed standard.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
7.6-4 The maintenance program shall address each of the following elements: 1 Organization and administration 2 Maintenance training and qualification 3 Maintenance facilities, equipment, and tools 4 Types of maintenance 5 Maintenance procedures and other work-related documents 6 Planning, scheduling, and coordinating maintenance activities 7 Control of maintenance activities 8 Post-maintenance testing 9 Procurement of parts, materials, and services 10 Material receipt, inspection, handling, storage, retrieving, and issuance 11 Control and calibration of measuring and test equipment 12 Maintenance tools and equipment control 13 Documented facility condition inspections to identify and address aging effects 14 Management involvement with facility operations	1.3.11 Quality Levels The assignment of Quality Levels (QL) is the method by which the implementation of the graded quality approach discussed in 10 CFR 830.120, "Quality Assurance Requirements" is ensured. Designation of correct quality levels helps to ensure that the appropriate quality assurance requirements are applied to specific RPP-WTP SSCs. The quality levels of the Project quality assurance approach and their applications are described in the QAP	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	DOE G 433.1-1, Sections 4.1 (Maintenance Organization and Administration), 4.2 (Training and Qualification of Maintenance), 4.3 (Maintenance Facilities, Equipment, and Tools), 4.4 (Types of Maintenance), 4.5 (Maintenance Procedures), 4.6 (Planning, Scheduling, and Coordinating Maintenance), 4.7 (Control of Maintenance Activities), 4.8 (Postmaintenance Testing), 4.9 (Procurement of Parts, Materials, and Services), 4.10 (Material Receipt, Inspection, Handling, Storage, Retrieval, and Issuance), 4.11 (Control and Calibration of Measuring and Test Equipment), 4.12 (Maintenance Tools and Equipment Control), 4.13 (Facility Condition Inspection), 4.14 (Management Involvement), 4.15 (Maintenance History), 4.16 (Analysis of Maintenance Problems), and 4.17 (Modification Work) provides the details of each of the corresponding items listed in SC 7.6-4. The guidance for quality assurance that is accordance with 10 CFR 830, Subpart A is identified in the section 4.16.4 of the proposed standard.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
15 Maintenance history and trending 16 Analysis of maintenance-related problems 17 Modification work.			
SAME AS ABOVE	4.2.2 Training and Procedures Operator training and procedures ensure that the facility is operated safely. The development of the training and procedures during facility design and commissioning takes account of the differing safety requirements. Procedures support the safe operation of the facility in varying ways. A hierarchy of procedures is developed that reflects the level of safety importance. Factors that determine the level of safety importance for training and procedures include support they provide for maintaining compliance to the Technical Safety Requirements (TSR) and maintenance of Safety Design Class and Safety Design Significant SSCs. Those at the highest level are subject to increased rigor with respect to their development and implementation. Increased rigor means independent review and endorsement by suitably qualified and experienced personnel or safety committees. All procedures that have an impact on the safe operation of the facility are developed and implemented with a suitable degree of rigor commensurate with their safety importance. Operator training and qualification requirements are tailored to operator requirements. Facility area operators are trained and qualified in their specific areas of operation, radiological and chemical hazards, and necessary emergency requirements (facility recovery and facility and site evacuation). Facility supervisors and operators with increased responsibility receive additional training (e.g., in specific operations, resetting of facility items required for safety, and emergency response). Training ensures that operators receive the necessary knowledge and experience to conduct operations with due regard for safety. Training of maintenance and technical personnel is tailored to the involvement of these personnel in the establishment and maintenance of administrative and engineered controls. More in-depth and frequent training is provided for those individuals involved with Safety Design Class and Safety Design Significant engineered features.	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	The guidance for training and procedures is identified in the sections 4.2 and 4.5 of the proposed standard.
SAME AS ABOVE	5.3 Configuration Management The configuration management program ensures that the RPP-WTP establishes and maintains consistency among design requirements, physical configuration, administrative controls, and facility documentation to the technical baseline throughout the operating and deactivation phases. Procedures are developed to manage changes to process chemicals, technology, equipment, and procedures, together with changes to facilities that affect a covered process. The procedures ensure that, prior to a given change, the following considerations are addressed: 1 The need to perform an unreviewed safety question (USQ) evaluation 2 The impact of the proposed change on the authorization basis (i.e., RL/REG-97-13) 3 The technical basis for the proposed change 4 The impact of the change on safety and health	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	The guidance for configuration management is identified in the section 4.7 of the proposed standard.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
	5 Modifications to operating procedures 6 Schedule consideration for completion of the activity 7 The authorization requirements for the proposed change 8 The training of employees who are affected by the change prior to commissioning of the process or the affected part of the process 9 Necessary changes in the process safety information and the authorization basis 10 The potential need for changes to the Technical Safety Requirements 11 Necessary changes to the master equipment list. In the chemical process industries, the above requirements are addressed by a Management of Change procedure. The Management of Change procedure is considered the central element of PSM and its primary purpose is to ensure that change is managed safely. For the Project, the Management of Change procedure is part of the configuration management system that goes beyond the requirements of 29 CFR 1910. The ISMP Section 1.3.16, "Configuration Management", provides a summary of the Facility configuration management program. Additional detail on this program is provided in ISAR Section 3.1, "Configuration Management". The configuration management program database includes Safety Design Class and Safety Design Significant SSCs. The database relates design information and requirements to the applicable SSCs and associated documentation. The inter-relational nature is such that proposed or identified changes to any part of the controlled design, configuration, or documentation identifies other affected design, configuration, or documentation entities for which consideration of acceptability of the change must be addressed. Within the database are the performance specifications for Safety Design Class and Safety Design Significant electrical and mechanical equipment. These specifications include the conditions under which the equipment must function during the accident condition (e.g., load, pressure, voltage, temperature, radiation field, and humidity). A proposed change would be disapproved if: 1 The change was found to compromise safety 2 The change would result in non-compliance with a regulation or law 3 The change would result in non-compliance with the contract.		
SAME AS ABOVE	5.4 Compliance Audits Compliance audits for the PSM program are conducted by BNI at least once every three years to verify that the procedures, practices, and maintenance activities developed to ensure nuclear and process safety are adequate and being followed. These compliance audits are performed by individuals knowledgeable of the process. The audits are often performed with the aid of a checklist. A report of the audit findings is developed in which corrective actions and their schedule for completion are provided. Additional detail on this program is provided in ISAR Section 3.6, "Audits and Assessments".	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	SRD SC 7.3-8 defines the requirement for this compliance audit.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
SAME AS ABOVE	5.6.5 Mechanical Integrity Procedures are established to maintain the integrity of process equipment, including pressure vessels and storage tanks, piping systems and pipe-mounted components, relief and vent systems and devices, emergency shutdown systems, controls (including monitoring devices and sensors, alarms and interlocks), and pumps. Inspections and tests that follow generally accepted good engineering practices are performed on process equipment. The frequency of inspections and tests is determined by manufacturer's recommendations, good engineering practices, and the vulnerability of components to the effects of aging, modified as necessary by operating experience. Inspection and test results are documented. Equipment deficiencies identified by the inspections or tests are corrected in a safe and timely manner. The Project training program includes the training of each employee involved in maintaining the integrity of process equipment. The Project QAP includes requirements for procedures to ensure that equipment, as fabricated, is suitable for the process application for which it will be used. Checks and inspections are performed to ensure that equipment is installed properly, and is consistent with design specifications and the manufacturer's instructions. A spare parts management system ensures that maintenance materials, spare parts, and equipment are suitable for the process application for which they are used. Central to maintaining chemical and radiological exposures at a minimum is the requirement to maintain the mechanical integrity of SSCs. Maintenance activities related to this requirement are categorized as follows: 1 Routine 2 Planned replacement 3 Preventative 4 On demand (i.e., in response to failures). The requirement for mechanical integrity is dependent on the duty of the equipment and its accessibility for routine inspection and maintenance. Therefore, in-cell equipment (which resides in a high radiation area) requires a higher level of reliable mechanical integrity than readily accessible out-cell equipment. The other important factor that influences the required degree of integrity is the role of the SSC in accident prevention or mitigation. Appropriate mechanical integrity of facility equipment is ensured using the following methods: 1 Early identification of safety significance and maintenance requirements (e.g., degree of accessibility and reliability) 2 Application of the appropriate manufacturing standards and quality assurance 3 Facility (equipment) acceptance testing 4 Inspection and monitoring requirements (preventative maintenance) 5 Training and maintenance instruction requirements.	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	The guidance for mechanical integrity with respect to inspection and testing is identified in the sections 4.13 and 4.8 respectively of the proposed standard.

Safety Requirements Document
24590-WTP-SRD-ESH-01-001-02
SRD Proposed Changes Summary/Safety Evaluation

SRD Safety Criterion	Currently Implementing ISMP Section	Proposed Code/Standard	Basis/Rationale
SAME AS ABOVE	11.0 Organization Roles, Responsibilities, and Authorities The responsibility for the design, construction, commissioning, operation, and deactivation of the River Protection Project-Waste Treatment Plant lies with the designated RPP-WTP contractors throughout these various life-cycle phases of the Facility. These contractors to the Department of Energy, Office of River Protection will include the Design, Construction, and Commissioning (DC&C) contractor, the Operations contractor, and the Deactivation contractor. As addressed in this ISMP, these contractor's roles, responsibilities, and authorities include defining and implementing nuclear, radiological, and process safety standards and the related safety bases for protection of the RPP-WTP occupational workers and the public. These RPP-WTP contractors have the sole responsibility for defining and implementing DOE-approved safety standards and communicating those safety standards as requirements to all RPP-WTP Project team members and subcontractors who conduct work on the Project. While the Project team members manage subcontractors, the RPP-WTP contractors retain responsibility for oversight of team members and subcontractors performance and for overall project safety. The commitment inherent in this structure is that line management retains the responsibility for development and implementation of the safety basis. Although some specific roles may be reassigned within the organization, line management's responsibility for safety is invariant. The RPP-WTP contractors assign safety roles to functional areas as indicated in Tables 9-1 through 9-5. Table 9-1 assigns roles for key elements of the design phase functional groups. The organization chart for the DC&C contractor organization is provided in Figure 11-1. The Operations and Deactivation contractors organization charts will be defined as the Project nears these phases of the Project. Project roles, responsibilities, and authorities for the DC&C contractor are presented in Section 11.1. Envisioned roles, responsibilities, and authorities for the Operations contractor are presented in Section 11.2.	DOE G 433.1-1 as tailored in SRD Volume II, Appendix C	The guidance for definition of maintenance organizational roles, responsibilities, and authorities is identified in the section 4.1 of the proposed standard. Additionally the Quality Assurance Manual, 24590-WTP-QAM-QA-01-001 defines project organizational roles, responsibilities, and authorities.